COAL MINING

MARCH, 1952 VOLUME 29, NO. 3

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Built *right* by the leading manufacturer of offset and roof-bolting stopers!

S11ST Stoper lengths range from 23" closed to 86½" open.

Only Le Roi-CLEVELAND S11ST gives you all these features for dependable, low-cost drilling

★ Convenient right-hand feed control provides the right feeding pressure for fast drilling in any rock.

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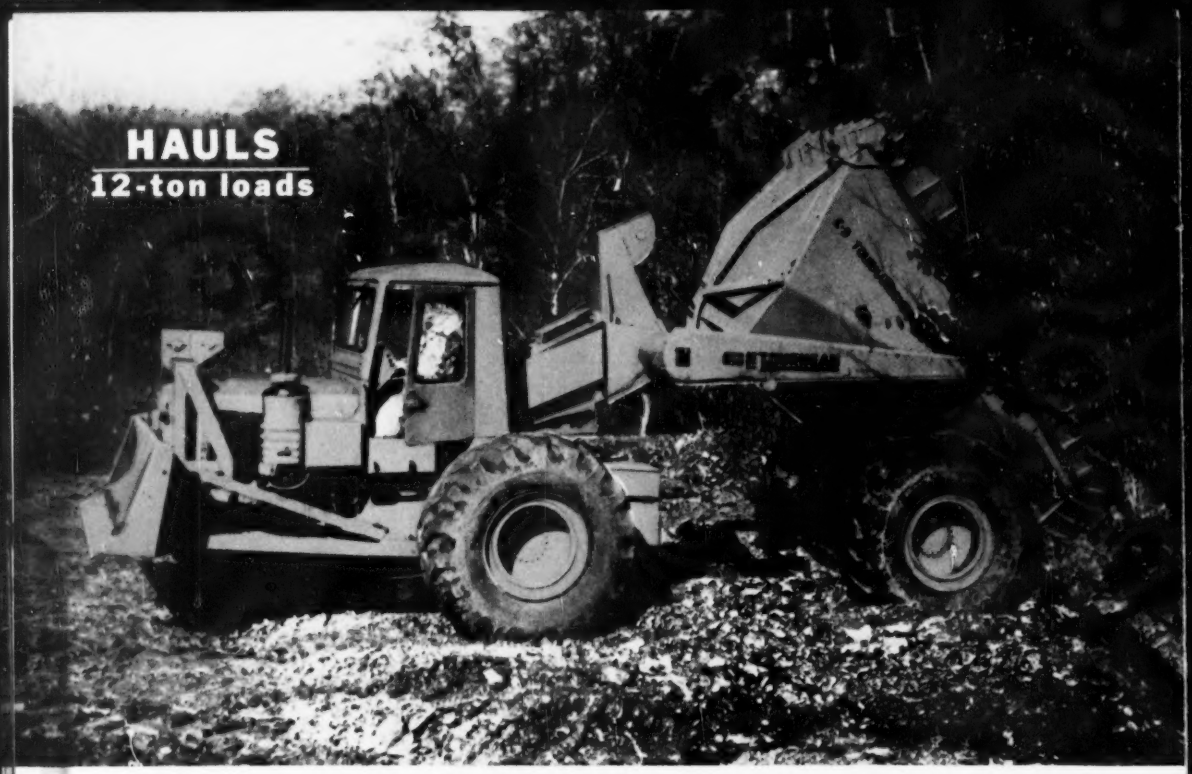


Rear-dump Tournarocker extra unit at W. Virginia

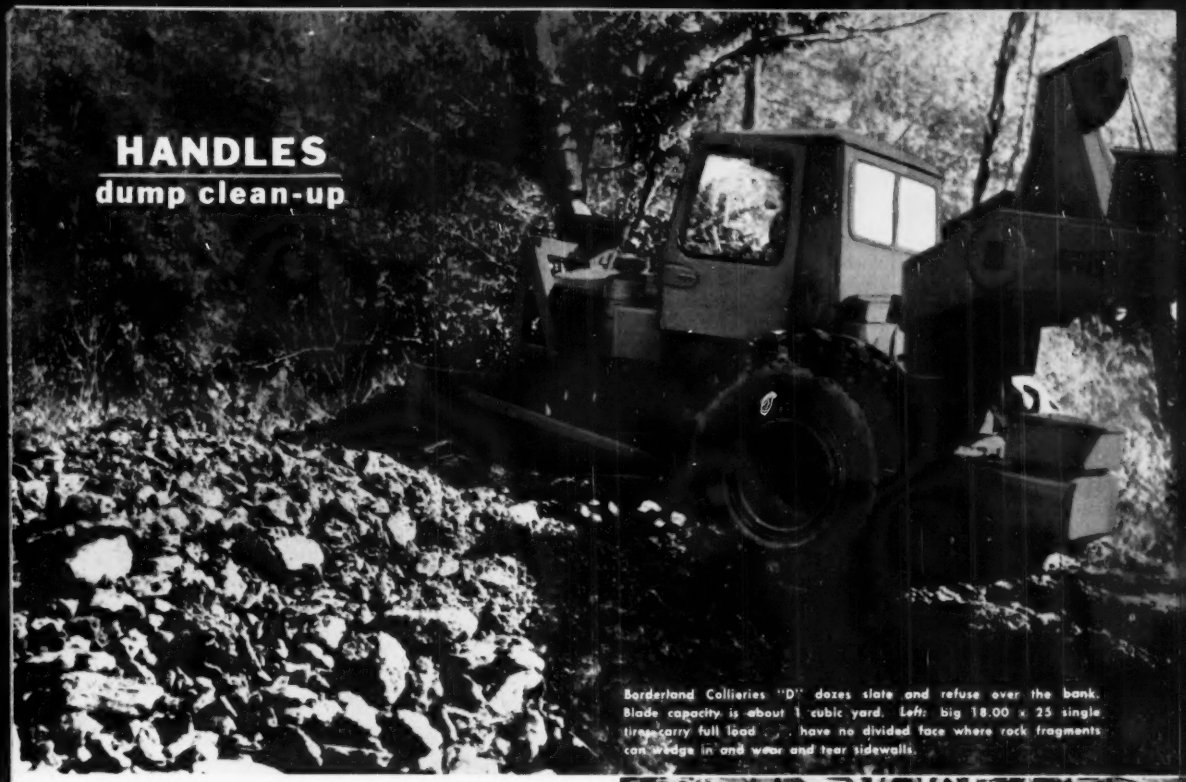
BORDERLAND Collieries of Bluefield cut costs at their Borderland coal mine recently by equipping a versatile D Tournapull prime mover with an electric-control bulldozer blade and a 9-ton rear-dump Tournarocker trailing unit. Rig teams up with standard truck to haul slate and refuse from tipple to spoil bank . . . dumps its load over the bank . . . then, as needed, cleans up spoil. Says Owner Bill Leckie, "The Tournarocker with blade saves us using another unit on the dump. It sure is a time and cost saver."

In spite of oversize 12-ton loads . . . adverse 7 to 10% grades over the winding 1500' haul road . . . and frequent soft, muddy footing after rains . . . the "D" completes the rugged 3000' cycle from tipple to dump and return in 2.3 minutes . . . an average speed of 15 m.p.h.

98% efficient in 1100 hours

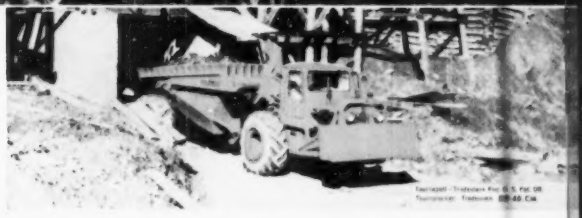
In 1100 hours, Borderland's Tournarocker has been 98% efficient. By handling 75% of total yardage, it keeps production on schedule, yet cuts inventory, maintenance, and operating costs. To

HANDLES
dump clean-up



Borderland Collieries "D" dozes slate and refuse over the bank. Blade capacity is about 1 cubic yard. *Left:* big 18.00 x 25 single tires carry full load . . . have no divided face where rock fragments can wedge in and wear and tear sidewalls.

eliminates Colliery



At tipple, Tournarocker with sideboards gets oversize 12-ton load. Reinforced, 3-ply steel-grid bowl takes shock loads of heavy slate without needing constant welding or patching. Simplified construction is rugged and dependable . . . with no frame, springs, hydraulics, you naturally need fewer spare parts, have less maintenance.

check what Tournarocker can do for you, see your LeTourneau Distributor. Ask him to show you Tournarocker's revolutionary features . . . over-the-bank electric dumping . . . 90° turns within 12′4″ radius . . . positive electric power steer . . . big single tires . . . simplified rugged construction (no frame, sub-frame, springs, hydraulic system) . . . interchangeability of rear-dump with scraper, crane and flatbed. Check owner-verified production reports . . . see for yourself how these features have paid off in extra profits on jobs similar to your own.

On rugged 3000′ cycle, the 122 h.p. "D" averaged 15 m.p.h. Big 4-wheel multiple-disc air brakes (2822 sq. in. total braking surface) have more than 4 times the braking surface of conventional haulers . . . provide safe, higher-speed operation on steep grades and over narrow winding haul roads . . . speeds spotting at shovel and on dump.

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Do You Know?

Four years of experimental work here gives definite proof that unmined coal can be burned underground in its **natural** seams and that the gases obtained can be used successfully to operate a gas turbine engine or as fuel to generate steam. The gases may also be used to make synthetic gasoline and fuel oils and to obtain chemicals.

Initial work in this experimental undertaking was begun in the spring of 1947. The entire project has been a joint undertaking of the U. S. Bureau of Mines and the Alabama Power Company. Coal seams of the power company were used. The early work was to determine if the coal could be burned in place without mining, and how the burning could best be controlled. More recent work was concerned with making use of the gases obtained as well as improving burning procedures. Included was the operation of two gas turbine engines.

During the 22 months of the second phase of the project, a total of 10,485 tons of coal, underlying an area of almost two acres, was gasified. Over a four-month period, when 65 per cent of the heating value of the coal was realized, the energy yield was greater than could have been obtained from the coal mineable from the same area under existing mining methods, the Bureau of Mines states. The two gas turbines were successfully operated for approximately 100 hours on combustible gases obtained from the coal.

In burning coal in natural layers under ground, holes are drilled into the coal from the surface and fire started in one. Air or oxygen is forced down this hole to support combustion. The gases of combustion are forced through the coal to the other holes and up to the surface where they are captured. These gases are similar to those obtained in the well-known process of making artificial household gas from coal.

• The hue and cry over the shortage of engineers for defense may have paid off. About 39,500 students enrolled as freshmen in 192 engineering colleges this past fall, it was learned.

This is 15 per cent above the 1950 enrollment, while all college enrollments dropped 5 per cent. It contrasts with 34,000 new freshmen expected. The figures were reported by Dr. H. H. Armsby of the Office of Education to the American Association for the Advancement of Science.

Estimates of June graduates were low too, Dr. Armsby said. The experts guessed that 38,000 engineers were graduated last June. Final figures show, he said, that actually 42,000 graduated.

Dr. Armsby pointed out that this does not by any means solve the problem of the shortage of engineers, estimated to be in the neighborhood of 60,000, "but it helps."

Here and There in the Coal Industry

The appointment of John J. V. Forbes as Director, United States Bureau of Mines, Department of the Interior, was announced November 10 by the President.

John J. V. Forbes

Born in Shamokin, Pa., in the heart of the hard coal region, Mr. Forbes started in mining as a breaker boy when only 10 years old. Working during summer vacations as a laborer, miner, or engineer, he was able to work his way through Kutztown (Pa.) State Normal School, graduating in 1905. Teaching in the Coal Township (near Shamokin) public schools for two years and continuing mining work during vacations, he entered Penn State in 1907, graduating with a B. S. degree in mining engineering in 1911.

Mr. Forbes worked in various capacities in coal mines in Pennsylvania and Ohio, then joined the Bureau of Mines as a "first aid" miner at the Pittsburgh Station in 1915. During the next 37 years his service with the Bureau was of such nature as to call forth the White House announcement which described him as "one of the world's foremost mine safety experts and an outstanding career employee in the Government Civil Service." Serving the Bureau successively as foreman miner, junior mining engineer, mining engineer, senior mining engineer, and principal mining engineer, Mr. Forbes was appointed supervising engineer of the Safety Division in July 1927, with headquarters at the Pittsburgh Station.

In 1941 he was appointed Chief Mine Inspector of the Bureau to supervise activities under the newly authorized Federal Coal Mine Inspection and Investigations Act. In 1945, he was promoted to assistant chief of the Health and Safety Branch, and again assumed supervision of the Coal Mine Inspection Division. Since 1948 he has been chief of the Health and Safety Division.

• H. C. Livingston, former Vice President of Operations of the Union Pacific Coal Co., Rock Springs, Wyo., has been elected Vice President in Charge of Operations of the Truax-Traer Coal Co.

• The Hutchinson Coal Co. announces the election of T. M. Wyatt as Vice President.

• The Board of Directors of the Imperial Coal Corporation at Johnstown, Pa., appointed J. N. Geyer to the office of Treasurer. In addition to his new duties, he will continue to function as Production Engineer.

• The 35th Annual Meeting of the Harlan County Coal Operators Association was held at Harlan, Ky. The new president of the association is J. S. Greene who is also president of the Garmeade Coal Co. The new Vice-pres. is M. M. Ellison, who is also president of the Southern Kentucky Coal Co.

Elected to the Board for the coming year are: Pearl Bassham, Harry M. Bennett, Kenes Bowling, S. J. Dickenson, F. L. Dupree, Charles S. Guthrie, L. P. Johnson, D. A. Perkins, R. C. Scott, J. E. Taylor, and B. W. Whitfield, III.

• President J. P. Routh of the Pittston Company, has announced the election of J. M. Miller of Beckley, West Virginia as President of Lillybrook Coal Company, Amigo Smokeless Coal Company and E. C. Minter Coal Company, with mines in the Winding Gulf District of West Virginia, Mr. Miller will continue as President of the Raleigh Smokeless Fuel Company, which markets the output of the Lillybrook, Amigo and Minter mines. With his new duties, Mr. Miller will be in full charge of all the Pittston properties in the Pocahontas Field.

At the same time it was announced that V. M. Bernard had been elected as Vice President in Charge of Operations of Lillybrook and its affiliated mining companies.

FROM PIT TO TIPPLE

"EUCS" haul MORE TONNAGE at LESS COST

Rear-Dump Euclids of 10 to 34-ton payload capacity have a wide range of body designs . . . they're unmatched for efficiency on the haul road and dump . . . with travel speeds up to 35.7 m.p.h. . . . powered by diesel engines of 125 to 400 h.p.

Combining rugged construction, large capacity and fast loaded travel speeds, Rear-Dump "Eucs" and Euclid Bottom-Dump Coal Haulers provide high production and low cost hauling in open pit mines. Designed to work with large loading equipment, "Eucs" are built for heavy duty off-the-highway service.

Ask your Euclid Distributor for a cost estimate on jobs similar to yours. Euclids are your best bet for hauling coal from pit to tipple.

Euclid Bottom-Dump Coal Haulers are built as a complete unit, with proper weight distribution, plenty of power and ease of handling. Powered by diesel engines to 300 h.p. . . . loaded speeds up to 34.4 m.p.h. . . . available in 20 to 40-ton capacities.

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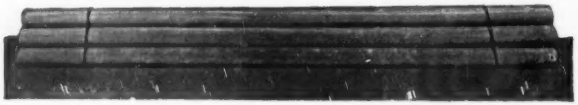
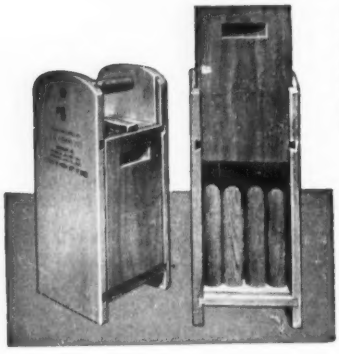


WOOD TAMPING POLES

For Tamping Explosive Shots: Poles are round made of Hardwood. Sizes to 10 ft. long.

1" Dia.	8c per lineal ft.
1⅛" Dia.	12c per lineal ft.
1¼" Dia.	14c per lineal ft.
1⅜" Dia.	16c per lineal ft.
1½" Dia.	18c per lineal ft.
1¾" Dia.	28c per lineal ft.
2" Dia.	32c per lineal ft.

Special diameters and lengths can be furnished. These Poles meet the requirements of the New Federal Mine Safety Code.



SECTIONAL TAMPING POLES

These Poles are made of straight grained wood and are coupled together with removable wood pin- held in place in recessed grooves by a rubber band and can be quickly connected and unconnected.

Couplers and Head Blocks are 4, 5, and 6 inches in diameter. Please specify size when ordering. Poles are 1½ inches in diameter.

Head Blocks	4" Dia.	$1.70 Ea.
Couplers	4" Dia.	3.90 Ea.
Poles 12 ft. long	1½" Dia.	3.60 Ea.
Poles 14 ft. long	1½" Dia.	4.20 Ea.
Poles 16 ft. long	1½" Dia.	4.80 Ea.
Poles 18 ft. long	1½" Dia.	6.30 Ea.
Poles 20 ft. long	1½" Dia.	7.00 Ea.
Poles 22 ft. long	1½" Dia.	8.80 Ea.
Poles 24 ft. long	1½" Dia.	9.60 Ea.

EXPLOSIVE BOXES: Made entirely of wood having no metal parts, tongue grooved and dovetailed construction with automatic lock using a rubber band for a spring, treated with paraffin to make moisture resistant. "Approved by the Pennsylvania Department of Mines." Sizes as listed based on 1¼" x 8" sticks.

Powder Box Prices are as follows:

No. 9 Powder Box	$2.55 Ea.	No. 25 Powder Box	$5.10 Ea.
No. 12 Powder Box	2.95 Ea.	No. 36 Powder Box	6.50 Ea.
No. 16 Powder Box	3.45 Ea.	No. 50 Powder Box	7.60 Ea.
No. 20 Powder Box	3.90 Ea.	No. 72 Powder Box	8.70 Ea.

Detonator Box Prices are as follows:

No. 6 size 2½" x 3" x 6" inside **$2.15 Ea.** No. 8 size 2½" x 2½" x 8" inside **$2.15 Ea.**

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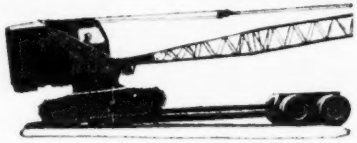

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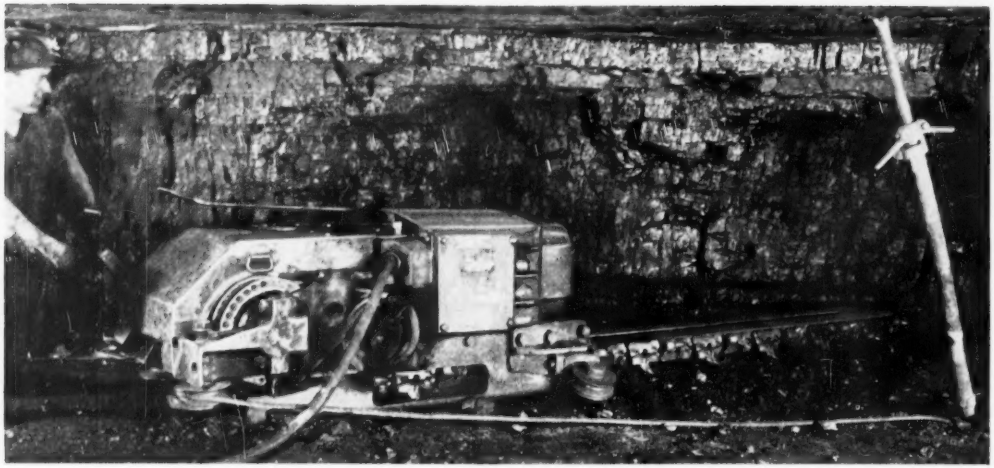
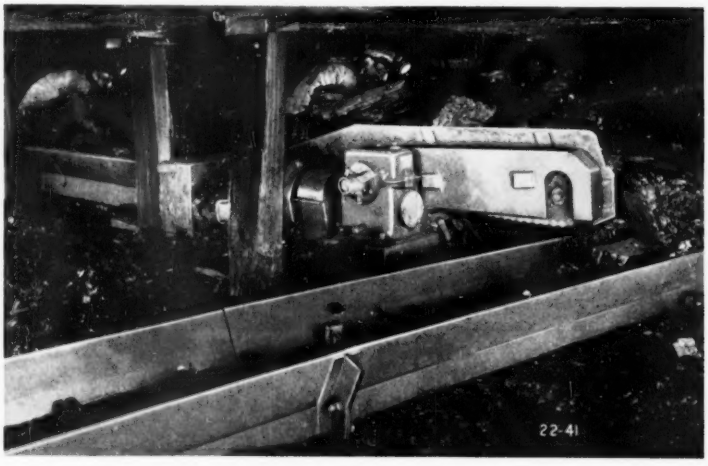


RELIABLE PERFORMANCE — LOW MAINTENANCE

The Jeffrey 35-B Coal Cutter (illustrated) is a continuous duty unit designed and built for tough underground service over long periods with minimum maintenance. These SHORTWALL machines are of simple, rugged design with few, slowmoving parts and slow speed motor.

At the right you see coal being moved out with Jeffrey Chain Conveyors, face, room and entry types. Here again, economy of operation is important and reliable performance a major benefit. We have the plant facilities, the experience and the engineering organization to be of great help to you. May we hear from you?



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Automatic Signalling and Pump Control Systems in British Coal Mines

By Leo Walter. Consulting Engineer

Recent developments in "telemetering", i. e. in remote transmission of measured values of water level over great distances and also of alarm signals have made mines drainage systems safe and fully automatic. Mining engineers considering the installation of fully automatic control of pumps for drainage purposes have long been

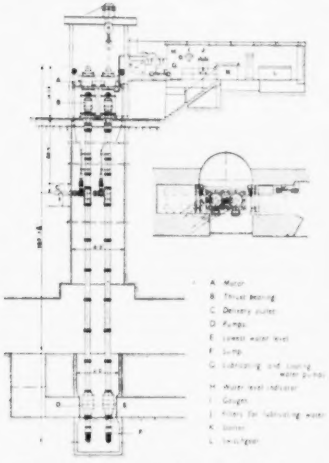


Fig. 1 — Dewatering and drainage pump with local instrument panel.

aware that economies can be effected by dispensing with an attendant at the pump house for 24 hours a day. Two essential conditions have, however, to be complied with before considering automatic pump house control and a remote alarm system, namely (1) Reliability of the control equipment used, and (2) continuous safe availability of indication of operation and of warning of faults.

A great amount of research work

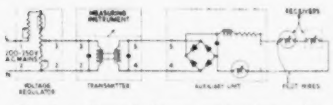


Fig. 2 — Circuit diagram showing units for remote transmission of water level.

has been put into this problem both in U.S.A. and in England. Attempts to adapt the usual water level controls system to the much more difficult problem of remote indication and automatic control of mines drainage pumps have not been considered good enough. Level control of a waterworks pumping station is perhaps the nearest approach to the control problem of mines drainage pumps, and based on this experience a few very special automatic control systems have been worked out for drainage.

The purpose and function of any remote signal and control equipment for mines drainage is in general as follows:

(1) Measurement of water level and transmission of the measured value to the control and the observation point. The latter can be in the pumping station, or can be located very remotely.

(2) Automatic control of the pump motor starter for reliable adequate stoppage or start of the drainage pump set, thus dispensing with a pump operator.

(3) Remote indication and recording of the water level by means of pneumatic or electric telemetering systems, using (a) a local instrument panel near the pumping set, and (b) a remote panel.

(4) Alarm annunciation and fault protection of the pumping and of the control system, performed in a way that utmost safety is achieved. The latter point recommends rather a safety control over the control system to be applied, i. e. a continuous watch over perfect function of automatic pump control must be possible from the remote supervision panel.

Measurement of Water Level

Three basic methods can be used for water level measurement, namely either a float and chain, actuating a level transmitter, or a pneumatic system using an air bell, or a floatless method can be used with immersion electrodes. It will depend on local conditions which of the three methods offers advantages.

The float method is usually applied for suspension up to about 50 feet, provided that adequate clearance of means of guiding the float can be arranged. When conditions do not permit the float to be used in particular for deep bore holes with submersible pumps having small clearance round the rising main, the closed pneumatic system is preferred which avoids the necessity for a compressor and reservoir. The air bell used consists, for example, of a brass tube with its lower end open but protected with a perforated metal filter. The bell can be fastened to the pump casing so that its open end is just above the pump intake, which is the datum point for

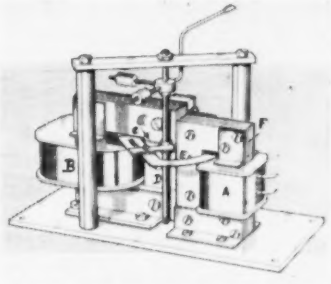


Fig. 3 — Elliott-Shotter flat top loop transmitter.

level measurement. A small-bore copper tube leads up to the shaft to the level transmitter, which latter can be up to 30 feet away from the top of the borehole.

Immersion electrodes can be applied as high and low water electrodes, producing electrical impulses. The latter are magnified, usually by electronic means without time lags. These electronic relays or magnifiers have to meet all stringent requirements from safety regulations, of course.

It is impossible to describe in a brief survey actual pump control, i. e., starting and stopping gear of the various types of boreholes or deepwell pumps. Each pump type and make has its own character-

istics, and any automatic control system has to take these characteristics into consideration. In many instances the pump makers do not supply the automatic control system themselves, but leave it to the ultimate user to be supplied direct from the makers of electrical control gear, and of automatic control instruments. This demands, however, very close co-operation between user, electrical control gear engineer, and instrument expert. From the very many types of pump

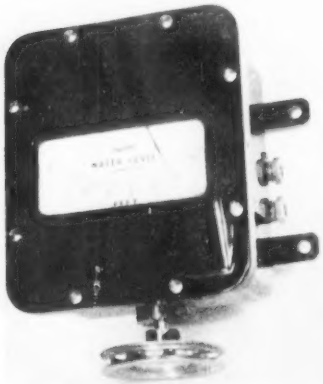


Fig. 3-A — Elliott Water level transmitter.

installations in coal mines in Great Britain, certain standard layouts have been developed for local supervision and semi-automatic control. Instrumentation is comparatively simple, as shown in the following example.

Two typical vertical shaft driven dewatering and drainage pumps of the Sulzer type are shown in Fig. 1. These deepwell pumps work in a colliery in Wales (England) and are manually controlled. The water level indicator H and guages together with filters J are located near starter K and switch gear L. For remote alarm, indication, recording and automatic control a reliable telemetering system would have to be applied to dispense with the pump-house attendant.

Remote Transmission of Water Level

Telemetering of alarm signals and of variations of water level to a distant point can use either pneumatic means for shorter distances, or electric impulses conveyed by means of cables or on hired Post Office lines. Pneumatic transmitters vary a constant air pressure into a variable output air pressure according to impulses derived from changes of water level. An electrical transmission system has been developed in English coal mines, however, which at the present time is the most widely used safety and control equipment, approved by the National Coal Board. Electrical telemetering, i. e., remote indication or recording of measured water level or others factors can work on timed electrical impulses. According to water level and position of a float, the duration of repeated electrical impulses sent out from a transmitter instrument are varied. At the end of a wiring transmission system is installed a receiving instrument. Its mechanism is designed to transform the electrical time impulses into position of a dial pointer, or of an instrument pen, which coincides exactly with the pointer or pen position of the remote transmitter. Such repeater systems are made by various prominent instrument makers and are widely used in public utilities, water and sewage works, central power stations, in pumping stations and in factories.

For remote automatic control over greater distances, however, a specialized transmission system has been worked out as follows:

The Elliott-Shotter remote indication and control equipment which enables many functions to be transmitted up to 30 miles over a single pair of wires, and which is manufactured by Elliott Bros., (London) Limited, of Century Works, Lewis-

Fig. 4 — Elliott liquid level indicator.

ham, London, S. E. 13., has now been redesigned to facilitate large-scale production and to incorporate further improvements. The new equipment is known by the name of "Elliottel" and consists of a transmitter, a voltage regulator, an auxiliary unit, and the remote receivers of whatever type is required—indicating, recording, integrating or controlling. The accompanying circuit diagram shows the arrange-

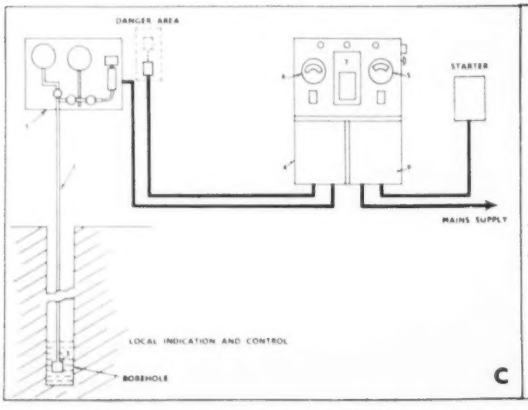


Fig. 5 — Instrument control panel for local supervision of mines drainage pumps.

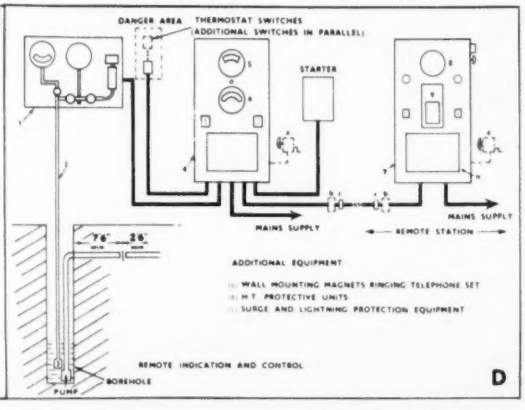


Fig. 6 — Schematic layout of automatic control of borehole or deepwell pump with remote supervision.

ment of the various units. (Fig. 2).

The transmitter is essentially a variably coupled current transformer, the main features of which are snown in the sketch below. It comprises an input electromagnet B energized by a coal A and with an air gap C; a pivoted driving spindle D supports a metal loop E which is so shaped that the current induced in it by the electromagnet is proportional to the position of the loop and pointer. (Fig. 3). The loop passes through the closed output iron system F, and a voltage is induced in the output coil F proportional to the deflection of the pointer. Temperature compensation is obtained by a magnetic shunt across the air gap of the input iron system. The driving spindle D is driven through 90 deg. by whatever type of measuring device is employed. (Fig. 3A).

The function of the voltage regulator is to ensure that a constant voltage is supplied to the input electromagnet of the transmitter. It embodies a 115V barreter lamp which is in series with a potentiometer resistance and two preset resistors. If the main supply voltage is not of 200-250 V a. c., a separate transformer is also supplied. The auxiliary unit incorporated the rectifiers and soothing circuit for converting the a. c. output of the transmitter into d. c. for the operation of the remote receivers, and a monitor receiver is also included to assist in the adjustment of the equipment.

The remote receivers (Fig. 4) are moving-coil instruments and are connected in series. Indicators are obtainable in sizes ranging from 2 in. to 45 in. in diameter, and recorders can be supplied with circular charts or with 3^{3}_{1} in. or 6 in. strip charts. Magneto ringing telephones can be added to the indication circuit without affecting the transmission.

Remote Automatic Pump Control

The Elliot system uses a moving coil indicator control relay having high and low level contacts adjustable to any setting on the instrument scale. A time delay of about five seconds ensures that a pump does not start a momentary fluctuation of the control pointer. Failure of transmission, pilot wires or supply to the control panel will stop the pump, and sound alarm. Level indicators and recorders are provided on the local and on the distant panel. The alarm system consists of a red lamp on the panel, and an alarm bell fitted inside the instrument cubicle. A switch is provided which silences the bell while the fault is being dealt with and simultaneously lights a yellow warning lamp to indicate that the switch must be turned to normal to obtain a further audible alarm. The red lamp is automatically extinguished when the fault is cleared.

The alarm signal is given for the following conditions:

(a) Abnormal high water level

(b) Transmission failure.

(c) Supply failure.

Fig. 5 shows a remote indication alarm scheme for a borehole or deepwell pump with local supervision only. A transmitter panel (1) contains a pressure operated depth transmitter providing pneumatic telemetering of water level, hand operated pneumatic depth checking locked against unauthorized manipulation. Instrument cubicle (4) provides automatic starter control (5)

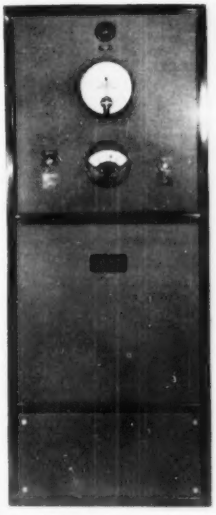


Fig. 7 — Remote water level instrument panel with alarms. —Courtesy Elliott Brothers Ltd., London.

and manual control. A level indicator (6) and a recorder (7) are fitted, and a visual alarm signal for high water level and transmission fault. A common audible alarm with means of silencing, and a circuit alarm are also provided for. (5) is control relay with adjustable high and low contacts.

The remote supervision scheme as illustrated in Fig. 6, and is more elaborate, but absolutely safe and meets all regulations. It consists of the borehole panel, as before, but has naturally a remote station located at a distance from the pumphouse. (4) is again a floor mounting steel cubicle with automatic (5) and manual pump starter level indicator (6), and with a visual alarm signal for thermostat in case of over-temperatures. From this panel remote transmission of level and of intermittent signal initiated by closing of safe circuit leads to the remote panel. This is a floor mounting steel cubicle (Fig. 7), and as a result of years of research and practical tests in collieries provides the following facilities:

Indication and recording of level, (Items 8 and 9).

Continuous visual alarm signal for high level and transmission fault.

Intermittent visual alarm signal for thermostat alarm.

Common audible alarm signal.

Provision for silencing audible alarm with visual warning signal.

Trickle charging and accommodation of battery (Item 11).

Item 8—1 Flush 8" water level indicator, scaled for full range in feet.

Item 9—1 Flush recorder type 200, 3^{1}_{4}" chart, 1" per hour, clocking work drive with adjustable high level and "no circuit" mercury contacts.

Item 10—12 Charts specially printed for use with the above recorder.

Item 11—1 12-volt battery for alarm circuit.

Where circumstances warrant it, 2 sets of surge and lighting protection equipment can be installed or mounted in control panel at pumphouse and one in remote indication panel. Two wall mounted, magneto ringing telephone sets with line filters for super-imposed communication over transmitter pilot wires can also be fitted, and so can special flow metering equipment. Pilot wires to the remote station can be private overhead, private underground, or rented from local authority.

It is claimed by the makers that the simplicity of the system with absence of contacts, and only one moving part in the transmitter and one in the receiver, with the absence of time lags even over great distances, has made the Elliott-Shotter system accepted by managements of coal mines in various countries. The possibility of telephone communications over the 2 pilot wires is an additional asset for safety.

Fire Fighting Equipment and Facilities at Indianola Mine

Presented at the 65th Annual Meeting of the Coal Mining Institute of America

G. D. Wyant, Superintendent
Indianola Mine
Northern Coal Mines
Republic Steel Corporation

George W. Wyant presenting his paper.

Indianola Mine is located approximately fifteen (15) miles Northeast of Pittsburgh, in what is known as the Allegheny Valley. The mine is operating in the thick Freeport Seam, which averages about 78 inches in height.

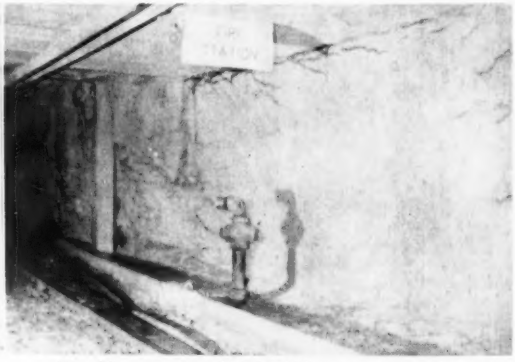
The coal bed is reached through two shaft openings 200 feet in depth. One shaft is used exclusively for hoisting coal and the other, a two compartment shaft, is used for hoisting men and materials and for a main return for the entire mine. Both the coal shaft and man-material shaft are on intake air.

A large drainage sump is located near the bottom of the man-material shaft and is dewatered by 2—1200 g.p.m. centrifugal pumps. These pumps discharge to the surface through a 12 inch line located in the return air shaft. In order to establish a permanent fire fighting system, 4 inch pipe connections were installed in the bottom of the 12 inch discharge column, from which approximately 21,000 feet of 4 inch pipe line was laid among all of the Main Haulage roads and into the working sections. Mine water used in these lines has a Ph value of 6.0 and is therefore not injurious to the piping system. Fire plugs, with standard fire hose connections were installed at 1000 feet intrevals along the Main Haulage roads (slide No. 1). Each outlet is appropriately designated by a red light and a sign which reads "Fire Station." Threaded fire plug outlets are kept well greased to minimize corrosion and are equipped with a brass cap to prevent accidental damage to the threads. Pressure is maintained in the lines at all times either through operation of the 2—1200 g.p.m. pumps or by reason of the static head in the 12 inch shaft column. When the two (2) shaft pumps are in operation, the pressure at the bottom of the 12 inch line is approximately 120 lbs. per sq. inch. In the event of a pump failure, power interrpution or insufficient water in the drainage sump, a connection has been made at the top of the 12 inch discharge pipe where water from the Oakmont Water Company can be turned into the line if required. Based on the height of the water column in the shaft, the static pressure would be approximately 85 lbs. per sq. inch.

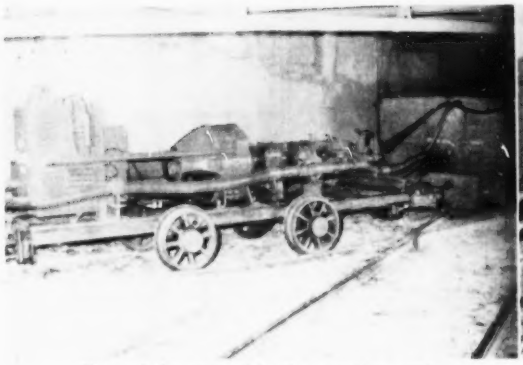
Discharge lines on all field pumps throughout the mine are equipped with a standard fire plug connection, which is located close to the pump. A valve is located out by the fire plug so water can be discharged through the plug when needed. All cutting and loading machines have a 15 lb. CO2 fire extinguisher located near the controls and all main line locomotives are likewise equipped. $2\frac{1}{2}$ gals. Soda-acid fire extinguishers are located at various points in all sections. Two sacks of rock dust are kept at all pumps and at all ventilating doors where trolley wire passes through. All cutting machines have water cars attached which have a capacity of 700 gallons. A small single stage centrifugal pump with a capacity of 5 g.p.m. at an 80 foot head is located on each car together with about 20 feet of $\frac{3}{4}$ inch hose equipped with a spray nozzle. Water from these cars is used primarily to allay dust while coal is being cut but the pressure developed by the small pumps also makes it ideal for extinguishing small fires before they can get a head start. Water for these cars is replenished as required at designated water stations in the various sections.

Our portable underground fire fighting equipment consisting of a train of three (3) units was put in service in 1949. The first unit, a water car with a capacity of 700 gallons is also equipped with a CO2

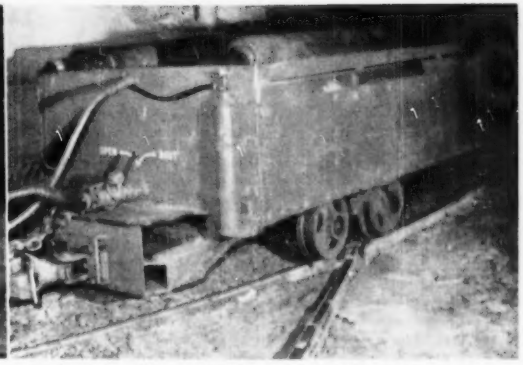
Fire Station is plainly marked.



Fire Plugs are installed 1,000 feet apart on main haulage roads.



View of the pump side of a pumping truck.



The 700 gallon water tank with brattice rolls on top.

extinguisher and several rolls of brattice cloth.

The second or middle unit is a steel flat bottom truck. On it is mounted a high pressure turbine type pump direct connected to a d.c. 20 H. P. 1750 R.P.M. motor together with the necessary starting equipment, fuse plugs, ground clamps and cables required for making speedy connections to power circuits throughout the mine. This pump with a nozzle pressure of 100 pounds will discharge about 90 g.p.m. through a $\frac{3}{4}$ inch nozzle. Discharge lines from the pump are so arranged that standard fire hose can be attached to either end of the truck. A 50 foot length of 3 inch high pressure rubber hose is permanently attached to the suction side of the pump, from which additional suction line can be added if necessary. This hose has adapter fittings so arranged that it may be coupled to the 4 inch fire plugs along the haulage road to permit the pump to act as a booster or it can be used to pump directly from local sumps or other sources of supply. A permanent connection in the suction line can be used to pump water from the 700 gallon water car, as a temporary measure, while fire hose is being connected to the regular fire plugs. Another connection in a line running from the pump to the water car permits refilling while the pump is being used as a booster or when it is pumping from sumps. Excess line pressure that may be developed is controlled by a release valve located in the discharge line to the water car. The pump truck is also equipped with a portable telephone that may be tapped into the telephone lines at any point along the circuit. On the truck are two steel containers for storing saws, axes, wrenches, nozzles and other miscellaneous equipment. The contents of these containers are kept secure by means of padlocks. Keys to the locks, kept in a glass covered case, mounted on the truck adjacent to the tool boxes are accessible when needed merely by breaking the glass. An electric strip heater is located on the bottom of the truck, near the 20 H. P. motor, which keeps the motor dry and prevents any accumulation of moisture while the units are housed in the fire station.

The Third unit built was a double-deck steel truck and is used to carry 1200 feet of standard fire hose. The hose is coupled in one length on the upper deck and can be completely removed from the truck in a few minutes. 10—10 feet sections of standard 3 inch pipe are carried on the lower deck to be used for suction line extensions. Six (6) timber jacks and a quantity of 2 inch by 4 inch's and 2 inch by 6 inch's are used for erection of temporary stoppings. Actual tests made show that a four (4) ply canvas stopping can be erected in about $1\frac{1}{2}$ minutes.

The three trucks are quipped with automatic couplers and may be easily coupled to any mine car or locomotive. These units are housed in a special place near the shaft bottom adjacent to the mine repair shop. Trolley wire and a spur track has been extended into the fire station so that any locomotive can enter the building and couple to the fire fighting equipment without delay. Maintenance and operation are under the direction of the repair shop foreman and all shop personnel have been trained to handle this equipment. Periodic fire drills are held at regular intervals to insure perfect condition of the equipment. By these drills, the responsible men are kept familiarized with its operation.

On Wednesday, May 24, 1951, we had occasion to test the equipment on an actual mine fire and it proved to be highly successful. While a Jeffrey L-600 loading machine was loading out a cut of coal in 10 South Section, the trailing cable became grounded on the reel. The resulting flash burned through the side of the reel and an adjacent hydraulic hose, spraying flaming oil over the discharge end of the loading machine. The CO2 fire extinguisher, which is kept on the machine and other extinguishers located in the section were brought to use. These extinguishers were very effective and it was believed that the fire was practically out when gases from the oil suddenly burst into flame and forced the men from the place. A call was made to the inside repair shop and the portable fire fighting equipment was immediately rushed to the scene. Approximately 35 minutes elapsed from the start of the fire until the equipment arrived. By this time the fire had gained considerable headway. The first pump was put into action immediately, using water from the 700 gallon tank car. In the meantime, connections were made and hose was being laid from the per-

In order to operate our mines automatically, we will have to have better educated workers, better educated workers will want better living conditions. We have good men in our coal mining industry now in the Ex G. I.'s and management must discover and develop them. Men should be selected for what they are and not for what their political status might be, or for their nationality or creed or color of skin might be.

manent water lines approximately 800 feet from the scene of the fire. When water was applied, a large quantity of steam was generated making direct contact very difficult. Heat from the fire caused the roof immediately above to collapse, completely covering the machine. The resulting smoke and steam filled the working place to a point 100 feet from the seat of the fire. Realizing that contact through this would be impossible with the ordinary fire nozzle, an adjustable fog nozzel was brought to use. The curtain of water produced by this nozzle acted as a barrier to the smoke and steam and permitted the men to advance to their former position under good roof approximately 40 feet from the fire.

In one hour after water was first applied the fire was completely out and the place was free from smoke and steam.

A fire fighting program of this type obviously requires considerable initial expense in the form of permanent pipe lines, adaptations to present pumping equipment and necessary portable equipment. We feel that any expense has been more than justified in our single experience. It would be extremely difficult to evaluate the probable loss of life and destruction of property that could have resulted if these facilities had not been available.

Since the advent of this fire fighting equipment, a greater sense of security is evident at Indianola Mine, not only with the official force but with each and every man engaged underground. These men fully realize that all possible steps have been taken to give them maximum protection against the hazards of mine fires.

In closing, I wish to state that much credit must be given to regular employees of the Electrical and Mechanical Department of Indianola Mine, who so ably aided in designing and actually constructed the fire fighting units. Republic Steel Corporation is also very grateful to State and Federal Mine inspectors who collaborated with us in developing and perfecting the fire fighting units. Republic Steel Corporation is also very grateful to State and Federal Mine Inspectors who collaborated with us in developing and perfecting the portable equipment.

A hundred years ago an official in the United States Patent Office shook a weary head and said "everything has been invented." Today, with the Patent Office Search Room swarming with feverish inventors and patent attornies, Patent Officials say "anything is possible."

The U. S. Patent Office found 1951 a busy year, issuing 41,356 patents or 1,281 more than during 1950. The weekly average output was 853, while for 1950 it was 828. The actual number issued each week hovered close to the weekly average for the year.

Patents for new chemical compounds and improved processes for making old chemicals stand high in number, again indicating America's leadership in the chemical field. Notable among these chemicals are pharmaceuticals, dyestuffs, insecticides, fertilizers, fungicides, explosives, detergents, fuels, synthetic fibers, weed-killers, water softeners and many others for use in the industries, the household or on the farm.

Metallurgists have received many patents during the year, particularly for new alloys, including some able to better withstand the high temperatures in gas turbine and jet engines, others with increased strength or hardness, and several assured longer life because better able to resist corrosion.

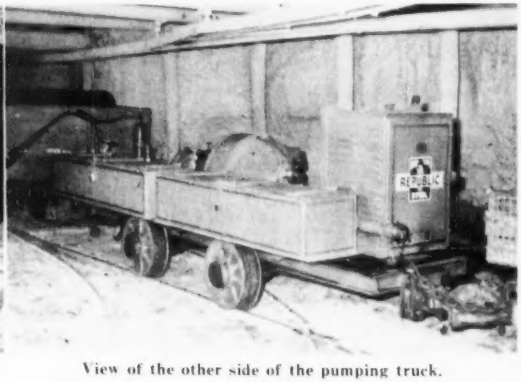
Substitute metals may come into wider usage, replacing common metals now in short supply, because of new processes of treatment discovered. For instance, aluminum containing a small amount of boron has the necessary strength to replace copper for electrical wiring. Magnesium containing three of the so-called rare metals has strength and durability and will find many applications. The alloying metals are cerium, neodymium and praseodymium.

Industry's number one problem in 1952 is lack of competent, trained engineers. Industry is short one hundred thousand Engineers and only twenty thousand will graduate during each of the next three years and about one half of these will be called for military service. Give the younger man in your mine an insight into your research and new operating ideas, so that he may better understand the meaning of your advanced mining plans. Give him an opportunity to advance by explaining importance of his job in your plans. Dissatisfied, ineffective non-technical personnel can affect your new advanced mining plans.

• The 59th Annual Meeting of the Illinois Mining Institute held in Springfield, Illinois, recently proved to be one of the most successful and eventful gatherings in this organization's long and useful history. A highlight of the meeting was an address by Defense Solid Fuels Administrator Charles W. Connor.

The following officers were elected for the ensuing year: President —Clayton G. Ball, Paul Weir Company, Chicago; Vice-President — William Bolt, Freeman Coal Mining Corporation, Farmersville, Illinois, and Secretary-Treasurer—B. E. Schonthal, Chicago. The latter is starting his twenty-third year as Secretary-Treasurer of the Institute.

Double deck steel truck that carries 1,200 feet of standard fire hose.



View of the other side of the pumping truck.

Left: Arthur Belton, Mining Eng., Consolidation Coal Co., Editor of the Fairmont Newspaper; G. R. Spindler, Professor, West Virginia University; Truman Johnson, Fairmont Coal Assn.; Freemont Davis, Safety Director, United Mine Workers of America.

Left: Cecil Urbanick, Pres. Dist. 31 UMWA; E. W. St. Clair, Gen. Mgr., Trotter Coal Co.; J. W. McDonald, U. S. Bureau of Mines and Bill Berry, State Mine Inspector, W. Va.

Seventeenth Annual Banquet of the Northern West Virginia Coal Mining Institute

The Seventeenth Annual Banquet of the West Virginia Coal Mining Institute was held in the Fairmont Hotel, Fairmont, West Virginia, on Saturday, November 17.

On our way home from this banquet, one of the men in the car said that he had observed a great improvement in the calibre of the average man there. He does not know it, but he ended a long search by me for someone to coroborate what I believed more than five years now, namely, that World War II gave all American Industry a much higher type of worker than it had before the war. And the more intelligent G. I. is having an influence on the non-G. I. worker.

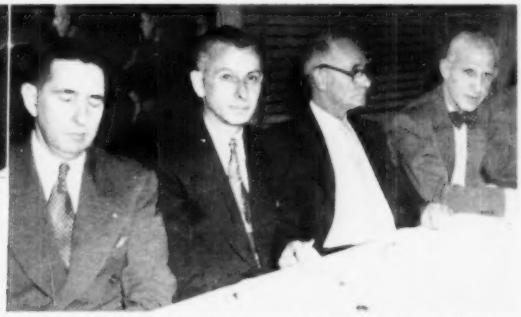
This question of intelligence is brought up because of the calibre of manpower that will be needed to develop and to operate automatic machines in our mines. At the moment we have no background of technical experience on which to base judgment. We do have radio, radar, television, vacuum tubes, telemechanisms and other automatic gadgets that make it possible to operate mining machinery automatically, but we still have to choose the expensive and inefficient trial and error methods of putting all those things together in a way that will give us our answers. In order to speed these answers we will have to have as many trials as possible going at the same time.

Left: Otto Heyer, Supt., Granttown Operation, Eastern Gas & Fuel Assn.; H. D. McGinnis, Principle speaker; Geo. W. McCaa, President of the Institute and Roy G. Martz, General Chairman.

The biggest questions in minds of the agressive mining men, at this moment, are: "Where are we going to find the resources to meet these additional intellectual demands?" "Are we discovering and effectively utilizing our intellectual potential?" "How rapidly can we increase our intellectual man power?"

Nothing is as beneficial to man as is discovery of new truths by which his life is cultivated. The average man today has some knowl-

Left: R. J. Feltcher, Supt., Joanne Mine, Sharon Steel Corp.; C. C. Cornelius, Gen. Supt.; Wm. Morris, Safety Inspector; J. D. Whalen, Supt., Francis Mine, all of the Greensburg Connellsville Coal & Coke Co.; and Thomas Whalen, Foreman, Joanne Mine, Sharon Steel Corp.



Left: E. H. West, Mine Accountant; E. W. Potter, Supt.; E. B. Tubridy, Div. Eng.; D. T. Stuart, Inspector of Operations, all of the Eastern Gas & Fuel Asso., Granttown, W. Va.; and J. T. Sinclair, Hewitt-Robbins, Inc.

Left: Martin Valeri, Asst to Gen. Supt.; Harry Swihart, Gen. Supt., Buckeye Coal Co.; Dick Johnson, District Manager, and Ross Barr, Engineer, Mine Safety Appliance Co.; E. S. Bradburt, Dist. Mgr., Ashland Oil & Refining Co.

C. H. Hardesty, Jr., Lawyer; C. E. Witt, Fairmont Supply Co.; A. H. Riehl, E. S. Stickle Co.; Thomas Ward, Federal Mine Inspector.

edge of physical phenomina through his own observation. He knows objects fall to the earth, he knows that electric sparks pass between conductors at different potentials. He also has had personal experience with phenomina in the field of biology, in medical sciences, in geology and in mechanical technology which permit him to develop increased understanding of their nature and their significance in this modern world.

We finished the last war with the realization that there were not enough scientists and development engineers to discover new basic knowledge to do the necessary industrial research and to train the future scientific generation.

With the manpower we now have in our mines, plus a few highly specialized engineers that might be hired or borrowed, we can get the answers to our questions, but since the real purpose of education is to overcome ignorance and prejudice—religious, national origin, complexion of skin, etc.—we can start that educational work within ourselves. The intelligence, the ingenuity and the ability to put together our present automatic and telemechanic devices is now in our mines. It is our job to find the talent, to develop it and hold it. The sooner we do that, the sooner we will have automatic coal mining.

Left: H. R. Hall, Supt., and Harold McIntyre, Ida Mae Mine, Bethlehem Collieries; John Schroeder, of the Schroeder Brothers, Manufacturers' Representatives; E. R. Prockett, Consolidation Coal Co.; P. R. Kennedy, Schroeder Bros.; Lowell Vonners, Supt., Trotter Coal Co.

Left: H. R. Sine, H. G. King, John Bovella, Jamison Coal & Coke Co.; Sutton Critchfield, Fairmont Coal Bureau; W. L. Doolittle, Retired.

J. L. Byrne, D. L. Springton, and R. W. Decker, Fairmont Machinery Co.; and J. C. Deamer, section boss, Granttown, W. Va.

Left: C. Kucsua, Section Boss, Granttown; Lawrence Wright and Paul F. Watson, Section Foremen, Mine 63, Consolidation Coal Co.; Albert Whaley, Supt.; and G. H. Flanagan, Section Foreman, Pursglove Coal Co.

Caterpillar D-8 Tractor pushing first cut over embankment.

One of the stripping shovels in second cut.

Stripping Operation of the Zimnox Coal Company

The Zimnox Coal Co. of Steubenville, Ohio, is stripping the Ohio 8 (Pittsburgh) seam of coal lying high in the hill above Brilliant, Ohio. Brilliant is an Ohio River town about 7 miles South of Steubenville in which is located the Tidd Power Plant of the Ohio Edison Co. The coal averages about 4 feet in thickness and makes a good industrial fuel. It is covered with a yellow and blue shale that requires shooting as it thickens and second and third cuts are drilled with McCarthy drills.

Stripping is done with high-lift shovels that work 2-shifts. The first cut of the up to 60 feet of cover is pushed over the enbankment by Caterpillar D-8 tractors. The last cut is pushed back against the highwall. The surface of the coal and the haulage roads are cleaned and maintained with the tractors and a Galion Model 102 grader. Loading is done with a Model 820 Osgood shovel having 1½ Esco coal loading dipper and by a Model 83 Byers shovel having 1 yd. Esco coal loading dipper. From 1200 to 1500 tons are produced each day.

The present pits lie about 5 miles from the town of Brilliant. All hauling is done in 28 company owned trucks. Most of the output goes to the Ohio Edison Co. power plant at Brilliant. Pits are worked to provide natural drainage, but old workings in the seam occasionally present water problems so 22 Jeager pumps ranging from 2 to 3 inches and 4 Gorman-Rupp pumps 2 inches in diameter are held in readiness.

One of the Jeager 2-inch pumps in the pit.

The Osgood Model 820 shovel with 1½yd. Esco loading dipper loading out the coal.

Aerial View of the Jeffrey Plant

Plant Statistics:

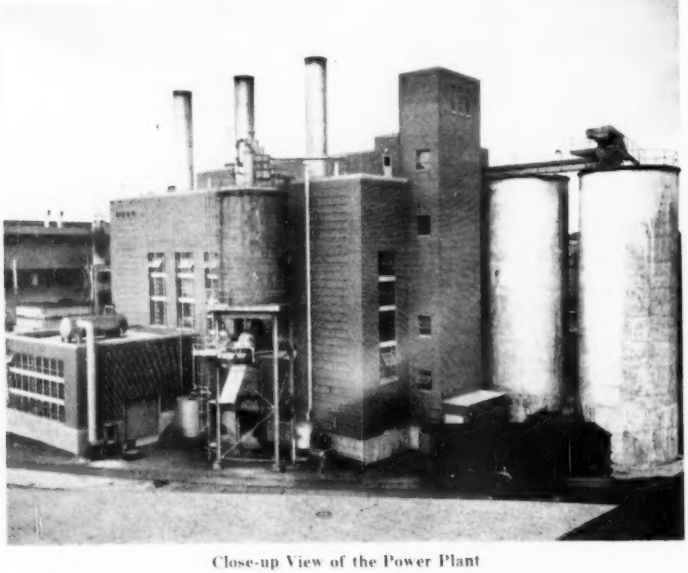
Approx. 48 acres (incl. K & J)
Floor Space—1,139,000 sq. ft.
No. of Bldgs.—104
Parking area—7 acres

Boiler House:

Jeffrey designed and built coal and ashes handling machinery includes: Bucket Elevator, Scraper Conveyor, Electric Vibrating Feeder, Track Hopper, Spiral Conveyors, Traveling Weigh Larries, Flextooth Crusher, Bin Valves, Chutes, etc.

Jeffrey Manufacturing Company's New Dustless Coal Burning Power Plant Is Saving $40,000 Annually

Recently built to replace a 30 year old power plant the new Jeffrey plant is of brick, glass and steel construction. Three new 3-drum boilers, each rated 60,000 lbs. per hr., capable of generating considerably more than that for 2-hr. periods, were installed and are bettering the expected efficiency of 78%. Total man-hour per year steam generation has been reduced from 41,590 with old equipment to 33,202 with the new.



Close-up View of the Power Plant

Coal from railroad cars passes over grating into large hopper, then to inclined scraper conveyor that takes it to crusher. Elevating buckets take crushed product to top of bunker where it passes to an enclosed screw conveyor that extends over silos. Space over bunker is totally enclosed. Discharge valves in bottom of bunker feed onto 2-ton traveling weigh lorry.

The boilers can operate from normal rating down to 6,000 lbs. per hr. without causing smoke difficulties. Make-up water for boilers averages 30%, condensate being returned to well-insulated outside tank and pumped to a deaerating heater. A large centralized control board at one end of the firing aisle carries the complete automatic combustion control system units—boiler meter, draft gage, smoke indicator, etc. Each boiler has a 30 foot, above boiler house, cylindrical stack.

Left. M. A. Shecwin, Jerome C. White, Bethlehem Collieries; George Nicholson, retiring honorary President of the Joseph H. Homes Safety Council; John Daugherty, Engineer, U. S. Bureau Mines; Richard Todhunter, Mgr. Barnes & Tucker.

Left: John McGinn in charge of operations, Sterling Coal Co.; Dennis J. Kennan for whom the dinner was given; R. T. Laing, Secretary, Central Penna. Coal Operators Assn.; and John B. Kerr, in charge of operations, Berwind-White Coal Co.

Testimonial Dinner to Dennis J. Keenan

The Northern Cambria Council of the Joseph A. Holmes Safety Association gave a testimonial dinner to Dennis J. Keenan for outstanding achievements among his fellow men in the coal mining industry of Central Pennsylvania. In attendance were Mr. Keenan's former co-workers and his many friends.

Dennis J. Keenan was born of coal mining parents, in a coal miners house at Smokerun, Clearfield County, Pa. He attended elementary school at Smokerun—such schools as they were in those days. He began working in a coal mine at the age of 13 and studied a correspondence course in mining in his spare time. Later he completed three courses in mining at the Pennsylvania State College and he taught mining classes for five years at Portage, Pa. He held the positions of Mine Foreman, and Mine Superintendent in Pennsylvania and in West Virginia.

In December of 1937 Dennis Keenan was appointed State Mine Inspector, a position he held until recently when he consented to be the General Manager of Mines for the Sterling Coal Co., Bakerton, Pa. (Post Office, Elmora, Pa.)

Expressing his gratitude at the dinner, Mr. Keenan did not forget his grateful parents who have since gone to the great beyond and to his two brothers and sister who aided him in the struggling days when he needed their aid most.

Starting from a humble beginning this man won his way into the hearts of the people he became associated with. What makes a man like Dennis Keenan? What makes a man like Dennis Keenan make a man like me give up his Saturday afternoon and evening and travel 100 miles from home in dangerous weather over mountainous country to be at a testimonial dinner given in his honor. I have an idea that the thing that makes Dennis Keenan is the same thing that made me change my line of work from selling advertising space in New York, Chicago, St. Louis, Cleveland and other big cities to publishing a magazine for the coal mining industry.

Lowly as the coal mining industry was said to be 26 years ago, it showed me that it possesed many outstanding men who, because of their situations at birth did not have the opportunity of the average man to demonstrate their ability. The coal industry possesses the greatest ingenuity of any industry in this world. If this were not true, thousands more miners would be killed every year and the cost of coal would be much higher.

That is why I am confident that there will soon be full automatic coal mining and conveying at the face. In the next 26 years modern miners will be few and they will be Automation Engineers.

This whole thing had its incep-

Left: Charles Keenan, Merchant, Portage, Pa.;Thomas Keenan, Sonman Mine, Koppers Coal Div., Eastern Gas and Fuel Association, Portage, Pa.; E. J. Kane, Bethlehem Collieries Corp., Revloc, Pa.; B. W. Collins, Barnes and Tucker Co., Barnesboro, Pa.

Left: John J. Brazil, Supt., Rich Hill Coal Co.; Fred W. Veil, Chief Electrician, Penna. Coal & Coke Co.; Henry P. Veil, Foreman, Maryland Trojan Co.; Wm. McCombie, Spangler, Penna.

Left: Clarence May, State Mine Inspector; John Radomsky, Chest Creek Coal Co.; James McNelis and George Radomsky, Elder Coal Co.

Left: A. J. Nairn, State Mine Inspector, 12th Bituminous District, Punxsutawney, Pa.; Charles Barnhart, M.S.A. Representative, Ebensburg, Pa.; Peter Gresh, Sterling Coal Company, Spangler, Pa.; Andrew Toth, Sterling Coal Company, Barnesboro, Pa.

D. K. Kreischer, U. S. Bureau Mines; John J. Resick, Gen. Supt., Johnstown Coal & Coke Co.; Robt. McCormick, Sr., McCormick Coal Co.; John MacIndoe, Supt., Springfield No. 4 Mine.

Left: James Benone, Benone Welding Co.; Pat J. Beatty, Federal Coal Mine Inspector; J. W. (Bill) Beck, Bethlehem Collieries; Sheldon Jones, Salesman for the Crichton Co.

tion in the distant past. Recorded human history is characterized by periods of blood, sweat and tears, interspersed with periods of great achievement. Because of his adaptability, no other animal has a greater potential chance of survival on this earth than does man, the word-maker, the tool-maker and the atom splitter.

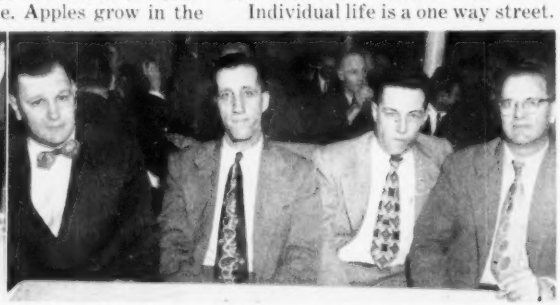
The biologist is optimistic about the future of man. To better understand the biologist's reason for being optomistic, let us go away back to early history of organism of species from which man developed. If paleontologists have read correctly the record in sedimentary rock of this earth, species passed on at a relatively rapid rate. Just before our time the Dodo, a duck-like bird became extinct because it did not mend its way of living to meet changing conditions on this earth. In our time the passenger pigeon and the heath hen have become extinct. The whooping crane, the trumpeter and the California condor are very near extinction.

Species become extinct because of over-adaptability and excessive specialization. Oranges grow in warm climates but fail in the temperate climate. Apples grow in the temperate climate but fail in warm climates. Overgrowth of giant nose horns of ancient titomotheres, heavy armour of the dinosour and great antlers of certain varieties of elk are said to have caused their extinction.

The brain and the nervous system of man are excessively large by comparison and are highly specialized in function. Whether this spells destruction or salvation, the biologist is not sure. Brains and intelligence in Newtons and Einsteins spell salvation; in Hitlers and Musolinis—destruction.

Individual life is a one way street.

Left: John Zooruskey, Electrician, Herbert Patterson, Supt., Raymond Kerreptor, Chief Electrician, all of the Reed Coal Co. and Thomas H. Donahue.



Left: Fred Leish, Supt., Barnes No. 2 Mine, Barnes & Tucker Coal Co.; Ken. Richardson, Foreman, No. 22 Colliery, Penna. Coal & Coke Co.; Earl Lamont, Safety Director and Thomas Lamont, Supt., both of the Sterling Coal Co.

It has no U-turns. Birth, youth, old age and death are a biological sequence, an inviolate law of living nature. In population, from bacteria to man, enormous numbers of individuals are dying continually under the most favorable conditions.

Three clearly defined levels of organism exist among things. First, the basic unit, is the cell. Microscopic in size, this sub-visible speck of matter embodies a structure function of great complexity. Attributes of higher life forms are within every cell. The second level is the multicellular individual composed of billions of cells. At this level well defined cell groups are arranged in definite relation to other groups. Each group is structually and chemically different, has specific functions to perform and develops from a single fertilized cell. With rare exceptions all cells work harmoniously together for the common good of the life unit, the individual. The third level in order of organization is population, society, species. Two kind of population exist, single-cell organism—bacteria— and many-cell organisms such as humans, ants and bees. An important point of the three life levels, ovserved by the biologist, is that populations have a longer life-expectancy than any of the individuals that make them up and that individuals live longer than their component cells. Cells by the thousands, even whole organs can be destroyed without effecting the survival of the individual. Individuals in populations die continuously without effecting the survival of the species.

Nature's laws of selective elmination and selective survival are still in effect. And like in the past, competitive world struggle will definitely kill off many old social structures and millions of individuals, old and young, in order to make living room for the emergence of new forms and new individuals.

• Jeffrey Catalog 840 is descriptive of 3 sizes of Jeffrey Cable Reel Shuttle Cars with many advanced features in design and construction. The Jeffrey type 66-C shuttle car has a 48" maximum height without sideboards. Load rating is 6½ tons. Is available with 4-wheel drive and 4-wheel steering or 2-wheel drive and 2-wheel steering. Elevating discharge is standard on both types. Operating compartment can be on either end.

The Jeffrey types 66-B and 66-A cable reels are 42" and 36" in height without sideboards and their loading capacities are 5-tons and 3½-tons respectively. They are also available with 4-wheel drive and 4-wheel steering or 2-wheel drive and 2-wheel steering with elevating discharge on both and operating compartment on either side.

• Synthetic gasoline from coal can be made economically, in spite of the high cost in present experimental work, provided valuable chemicals obtainable in the manufacturing process are recovered and made marketable.

This is the opinion of Dr. G. F. D'Alelio of Koppers Company, Inc., who has revealed that his company is building a pilot plant at its new Verona, Pa., Research Center to make gasoline from coal by the hydrogeneration process. Gasoline of aviation rating can be made by this system, he stated, but a long list of aromatic chemicals such as benzene, phenols and cresols may be obtained in the process.

"While plants to make gasoline from coal are costly to build and gasoline could not presently be produced in them at prices in competition with petroleum gasoline, research is finding ways to produce an increasing number of valuable chemicals in such proscesses," he said. "These processes can be regulated to produce more chemicals and less gasoline. It is here that upgrading of products may result in a 'coal-to-gasoline' plant becoming economically feasible much sooner than many think."

These chemicals are the building blocks for thousands of other materials, he added, the Koppers believes that when such plants are built, new chemical fields will be opened, just as perfection of the chemical-recovery coke oven nearly 50 years ago created chemical, tar processing, wood preserving and other industries which are strong and still growing today.

Gasification and hydrokenation are the two best-known methods for making gasoline from coal. From direct gasification, the process in use in the demonstration plant of the U. S. Bureau of Mines in Missouri, a synthetic gas containing primarily hydrogen and carbon monoxide is produced. This, in turn, can be the base for synthetic gasoline and many aliphatic chemicals such as alcohols, aldehydes, ketones and the fatty acids which also have wide use in industry.

• As a result of an amicable settlement, the suit of The Sunnyhill Coal Company vs. The Jeffrey Manufacturing Company, which was filed on May 23, 1951, has been dismissed, and the parties have terminated their previous contract, Jeffrey has received an exclusive license to manufacture and sell Colmols and Molveyors in the United States.

With this complete settlement, Jeffrey will continue its development, manufacture and sale of Colmols and Molveyors, which have already demonstrated their superiority in the field of continuous mining of coal.

• William Dickey, previously Branch Manager of Beckwith Machinery Company's Clearfield, Pa., operation, has been named Pittsburgh Sales Manager for that Western Pennsylvania equipment distributorship.

WILLIAM DICKEY

Mr. Dickey joined the Beckwith organization in February of 1946 and, following an intensive training period, served as salesman for three counties of Ohio and for Lawrence and Mercer Counties in Pennsylvania. In 1948 he was made Branch Manager at Beckwith's new Clearfield, Pa., location. Mr. Dickey replaced Mr. Lloyd F. Stamy in the Pittsburgh Sales Manager's office in January.

WALTER W. COLDREN

Mr. Walter W. Coldren has been appointed to succeed Mr. Dickey as Branch Manager at Clearfield, Pa. Mr. Coldren joined Beckwith Machinery Company in 1941 as a partsman at their Bradford, Pa., branch. Following a period of service with the military forces he returned to that location and served a year and a half as Assistant to the Manager at Bradford, Pa.

In 1948 Mr. Coldren was made Parts Store Manager at Belmont, Ohio, and was then transferred to the Pittsburgh Sales Department in 1950 until January of this year when he assumed his new responsibilities as Clearfield Branch Manager.

Caterpillar Diesel D13000 Engine provides power for the Lorain shovel working on strip mining operations near Kittanning, Pennsylvania. Caterpillar Diesel D8 Tractors with No. 8A Bulldozers are also working on these stripping operations.

Caterpillar Diesel D8 and D7 Tractors, equipped with No. 8S and No. 7S Bulldozers respectively, are backfilling on coal mining operations near High House, Pennsylvania.

• MONOSEAL, a new silicone base, invisible liquid which is reputed to keep water out of masonry walls for many years, is described in a new bulletin just issued by The Monroe Company, Inc., Cleveland.

The bulletin describes how MONOSEAL penerates into the surface and silicone coats the pore walls. Application methods and results are illustrated in detail.

For copies, write The Monroe Company, Inc. 10703 Quebec Ave., Cleveland 6, Ohio. Ask for Bulletin 117-11.

• DAM-TITE, a new silicone-base water repellent for exterior masonry surfaces, is announced by Speco, Inc., Cleveland manufacturer of industrial maintenance products.

According to the manufacturer, DAM-TITE is a completely colorless liquid which penetrates masonry surfaces up to ¾", waterproofing the pore walls without plugging them or preventing air passage. It can be sprayed or brushed on brick, concrete, stucco, stone, unglazed tile or asbestos shingle surfaces. Because of its water repellency, DAM-

TITE keeps damaging moisture from reaching interior walls and at the same time prevents exterior chipping, cracking and frost damage. It is reputed to prevent oxidation with its resulting unsightly efflorescence. Because DAM-TITE repels water, it also sheds the dirt and stains that water normally carries into masonry surfaces.

The manufacturer states that DAM-TITE has no effect upon the appearance or texture of wall surfaces. In fact, it is said to greatly enhance the natural beauty of stone.

For more information write to **Speco, Inc.**, 7308 Associate Avenue, Cleveland 9, Ohio.

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MARCH, 1952

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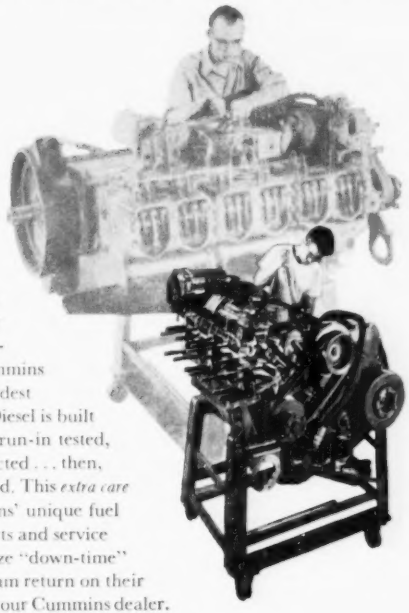

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PHILADELPHIA, Cummins Diesel Engines, Inc.: 209-13 North 22nd Street, Philadelphia 3, Pennsylvania. Telephone Rittenhouse 6-4460. Branches: Hoffman Boulevard and Chestnut Street, Ashland, Pennsylvania; 6501 Hamilton Avenue, Pittsburgh 6, Pennsylvania; 614 Light Street, Baltimore 30, Maryland . . . **DOVER, Cummins Diesel Sales Corporation of Ohio:** 113 North Wooster Avenue, Dover, Ohio. Telephone 42351. Branches: 3827 Spring Grove Avenue, Cincinnati 23, Ohio; 741 Grandview Avenue, Columbus 8, Ohio; 3560 East 93rd Street, Cleveland 5, Ohio; 2883 West Market Avenue, Akron, Ohio . . . **CHARLESTON, Cummins Diesel Sales & Service, Inc.:** 1603 Kanawha Boulevard, West, Charleston 30, West Virginia. Telephone Capital 2-178 . . . **LOUISVILLE, Cummins Diesel Sales of Louisville, Inc.:** 2209 Taylorsville Road, Louisville 5, Kentucky. Telephone Cherokee 2616, 2617, 4621 and 4622.

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